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Neurological complications to botulinum toxin A therapy

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Abstract

Botulinum type A therapy has been used worldwide for treatment of medical and cosmetic conditions. Due to its high potency there are no pharmacokinetic studies in humans. Little is known of how the toxin is processed in the central nervous system (CNS). For decades the safety of botulinum use has been based on the belief that the toxin stays confined to the injected site. However, there is a growing amount of evidence that the toxin can spread generally and cause significant clinical illness. The two most likely mechanisms of toxin inflicted damage are: interruption of the inter-neuronal communication on peripheral and central level and autoimmune reaction.

My personal experience and the review of the literature suggest the following possible patterns of toxin induced damage: CNS: autoimmune encephalitis (3 cases of personal observation), likely centrally induced persistent fatigue and lack of endurance (5 cases of personal observation) and others (2 cases of personal observation); Peripheral nervous system: autoimmune reaction: Guillaine-Barre and small fiber polyneuropathy; Autonomic nervous system: heart arrhythmia (1 death: personal observation), constipation (2 cases of personal observation) and others.

At present, there are no available tools for toxin isolation from the system, even in victims who died with botulism or in animals sacrificed to the toxin, since it disappears from the blood stream in the first 20 minutes, when injected in animals. Unless synaptosomal associated protein (SNAP 25) cleavage studies are conducted in specific organ tissues, there is little today to prove the causality of death or damage to the toxin.

Biography

Anna Hristova, MD has completed her medical education and board certification in Neurology in Europe and in USA. She finished two fellowships in Movement disorders one of which at Columbia University, NY and an additional fellowship in Clinical Electrophysiology at Einstein University, NY. She received extensive training on botulinum toxin clinical use at Columbia University, NY and in Asia. Dr. Hristova started using the toxin for treatment of medical cases in 1993. Her clinical research for the last 6 years has been focused on the side effects of botulinum toxin therapy. Dr. Hristova has 25 years of clinical experience.